

# POINT LOMA NAZARENE UNIVERSITY

## Department of Kinesiology

### KIN340 Physiology of Exercise (3 Units)

### Fall 2017

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**Instructor:** Brandon J. Sawyer, PhD, Associate Professor of Kinesiology and Biology  
Kinesiology Department Chair

**Office:** Kinesiology Office 1

**Phone:** x2283 [619.849.2283]

**E-Mail:** BrandonSawyer@pointloma.edu or [bsawyer@pointloma.edu](mailto:bsawyer@pointloma.edu)

**Time:** MWF: 8:30 – 9:25am

**Location:** Kinesiology 2

#### **Dr. Sawyer's Office Hours:**

MWF: 11am to 12pm

MW: 2 to 4pm (Come take a walk with me)

F: 2 to 3pm (some weeks, check with me)

If you have any questions about the material in this course, feel free to stop by during my office hours as listed above. Either set up an appointment or simply drop by. I will also be in my office at other, unscheduled times. If my office hours don't work for your schedule, e-mail or stop by and we can set up an appointment to meet.

**\*\*I am here to help you in whatever way you need. Feel free to come to me with questions about the course, your life, your future, your career, or anything else that comes up. *You all matter greatly to me.***

#### **PLNU Mission**

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

#### **I. Catalog Description:**

A study of the effects of vigorous physical activity upon the systems of the body; development of an understanding of factors which constitute training of the human body for high levels of health and physical performance.

#### **II. Course Learning Outcomes:**

**After completion of this course you will be able to:**

1. Demonstrate a working knowledge of the structure, function, and physiological concepts surrounding exercising skeletal muscle.

2. Demonstrate a working knowledge of the essentials of human metabolism and bioenergetics with a special focus on how they relate to physical activity.
3. Demonstrate the skills necessary to measure and compute energy expenditure.
4. Demonstrate a working knowledge of physical fatigue.
5. Demonstrate a working knowledge of the physiology of the cardiovascular system with special emphasis on how it works under conditions of vigorous physical activity.
6. Demonstrate a working knowledge of the physiology of the respiratory system with special emphasis on how it works under conditions of vigorous physical activity.
7. Demonstrate a working knowledge of the muscular, cardiovascular, and respiratory acute and chronic responses to physical activity.
8. Demonstrate a working knowledge of the general principles of endurance and resistance exercise training.
9. Describe the adaptations to resistance and endurance exercise training.
10. Manipulate a resistance training program to invoke different physiological responses.
11. Demonstrate a working knowledge of the effects of exercise in heat and altitude extremes.
12. Demonstrate a working knowledge of the immense health benefits of physical activity.
13. Describe the pathogenesis of type 2 diabetes and cardiovascular disease.
14. Describe the physiological effects of exercise on the pathogenesis of cardiovascular disease and type 2 diabetes.

#### **Core Competencies Assessed in this course**

1. Quantitative literacy is assessed with the “VO<sub>2</sub>max lab worksheet” (see assignments below)
2. Critical Thinking is assessed with the “Final Concept Map Paper” (see assignments below)
3. Information Literacy “Final Concept Map Paper” (see assignments below)
4. Writing Communication “Final Concept Map Paper” (see assignments below)

### **III. Required Materials**

1. **Textbook:** Kenney WL, Wilmore JH, and Costill DL. Physiology of Sport and Exercise. Human Kinetics Publishing Co., Champaign, IL, **6<sup>th</sup> Edition**, 2015.
2. iClicker2.

### **IV. Educational Opportunities**

1. **Quizzes:** Quizzes will be administered via the iClicker2 on most Fridays. The quiz will be on the required reading for the day. Quizzes will be available on canvas 2 days before the quiz. Students are to complete the quiz at home while reading and record their answers on a sheet of paper. Students will have the first 5 minutes of class to “turn in” their quizzes via the iClicker on the day of the quiz. There will be 11 quizzes given over the course of the semester and the lowest quiz score will be dropped. **This will take the place of retaking quizzes for unexcused absences.**
2. **Team Based Learning (TBL):**  
TBL is an innovative teaching method that has proven to improve learning. You will all be placed into teams at the beginning of the semester. We will have 2 TBL days in which you will study on your own before class, take a short quiz by yourself (iRAT) on that material when you arrive to class, and then take the same quiz with your team (tRAT). We will follow up for the rest of the class and the following class with some exercises based on that material that you just learned. The gallery walk days will also be part of the team based learning
3. **Concept Maps 1 & 2:** Information from class notes and the textbook will be used to create flow diagrams explaining the formation of ATP (#1) and the control of heart rate during exercise (#2). Students will use the free concept map website bubbl.us. For each account made on bubbl.us you can

make 3 mind maps. The maps must be exported as an image and uploaded to canvas before the due date and time.

4. **Final Concept Map:** This will be a more detailed concept map explaining in detail the effects of prolonged (3 months at least) endurance exercise training on one of the following: atherosclerosis or blood glucose control. See assignment instructions for more details.
5. **Lab Reports:** There will be a short lab report due 1 week after each laboratory experience in the class. Most labs will consist of volunteers from class participating in the exercise testing then each student individually completing the report. You will be given one chance to correct and return your first lab report after the first grading.
6. **Classroom Participation:** We will use the iClicker2s on most class days. **You will receive points based on your participation, not based on answering the question correctly.** There are more class days that we will use the clickers than 20, but you only need to use the clickers on 20 days to get full credit. This gives you some grace for forgetting your clicker, not having extra batteries, or missing class. This also gives me some room to not have clicker questions every single day. You receive 2 points for each day you participate in the class via clicker responses. You must answer at least 75% of the clicker questions for the day to get the participation points.
7. **Lecture Exams:** The exams will be designed to test the students' comprehension of the material presented via lectures and independent studying of the textbook. Questions will include: multiple choice, fill in the blank, matching, true/false, and short answer format.
8. **Final Exam:** The final exam will have a new material portion worth 50 points and a cumulative portion worth 100 points. The cumulative portion will be in a "Major Concepts" format. Information from the entire semester will be tested. The Major Concepts format means that student will only be tested on the large and most important concepts of the course.

## V. Course Grading:

	Item	Points	Total Points
1.	Quizzes	11 @ 10 points each	100 (drop lowest)
2.	Exams	3 @ 100 points each	300
3.	Concept Maps 1&2	2 @ 25 points each	50
4.	Clicker Participation	20 @ 2 points each	40
5.	iRATs/tRATs	3 @ 20 points each	60
6.	Gallery Walks	3 @ 10 points each	30
7.	TBL Peer Eval	1 @ 20 points	20
8.	TBL Activities	4 @ 5 points	20
9.	Lab Reports	2 @ 25 points	50
10.	Final Concept Map	1 @ 100 points	100
11.	Final Exam	1 @ 150 Points	150
<b>Total</b>			<b>940</b>

<u>Grade</u>	<u>Percentage Points</u>	<u>Grade</u>	<u>Percentage Points</u>
A	94-100	C	74-77
A-	90-93	C-	70-73
B+	88-89	D+	68-69
B	84-87	D	64-67
B-	80-83	D-	60-63
C+	78-79	F	0-59

## **VI. Course/PLNU Policies**

### **1. Attendance:**

Students are required to attend class every class period unless they notify the professor in advance. Excused absences for emergencies are accepted with notification ASAP. Role will be taken and students missing more than 6 classes will be de-enrolled from the class

### **2. Late Work:**

Assignments not turned in by the **day and time** they are due will immediately be docked 20% (this includes assignments turned in minutes after the 11:59pm deadline). If the assignment is one week late then 40% deduction, two weeks late or more the grade will be docked 60%. Late quizzes will not be accepted.

### **3. Make-Ups:**

Make up exams/quizzes will be given only if the professor is notified of the excused absence prior to the missed class or if the student has a legitimate emergency. No make-up labs will be allowed.

### **4. Academic Honesty:**

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

### **5. PLNU Copyright Policy**

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

### **6. Laptop Computers:**

I recognize that portable computers may be the preferred method for students to take notes in this class and I support those students who choose this method. Computers, however, can become a distraction as they also can enable activities other than note-taking. These activities are not only a distraction to you, but they are also a distraction to the students around you. If you are found using your computer during class for anything not related to class you will lose your privilege to use your computer during class.

### **7. PLNU Academic Accommodation Policy:**

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at [DRC@pointloma.edu](mailto:DRC@pointloma.edu). See [Disability Resource Center](#) for additional information.

### **8. PLNU Attendance Policy:**

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be

de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See [Academic Policies](#) in the Undergraduate Academic Catalog.

## 9. Communication:

Email will be the main form of communication used by the professor outside of class. Students are expected to check their @pointloma.edu email at least on a daily basis. If you know of issues with your @pointloma.edu account please notify the professor immediately. Any information I communicate via email I will expect you to know.

## 10. FERPA Policy

In compliance with federal law, neither PLNU student ID nor social security number should be used in publicly posted grades or returned sets of assignments without student written permission. This class will meet the federal requirements by (Note: each faculty member should choose one strategy to use: distributing all grades and papers individually; requesting and filing written student permission; or assigning each student a unique class ID number not identifiable on the alphabetic roster.). Also in compliance with FERPA, you will be the only person given information about your progress in this class unless you have designated others to receive it in the “Information Release” section of the student portal. See Policy Statements in the (undergrad/ graduate as appropriate) academic catalog.

## 11. Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.

## VII. Tentative Course Schedule

Date	Topic	Assignment Due	Required Reading
Aug 29 (T)	Introduction/Skeletal Muscle		Chapter 1
Aug 30 (W)	Skeletal Muscle	<b>Quiz #1</b>	Chapter 1
Sept 1 (F)	Neural Control		Chapter 3
Sept 4 (M)	<b>No Class: Labor Day</b>		
Sept 6 (W)	Metabolism/Bioenergetics	<b>Quiz #2</b>	Chapter 2
Sept 8 (F)	Metabolism/Bioenergetics		Chapter 2
Sept 11 (M)	<b>TBL:</b> Hormonal Control	<b>iRAT/tRAT #1</b>	Chapter 4
Sept 13 (W)	<b>TBL:</b> Gallery Walk Review	<b>Concept Map #1 Due Sept 14<sup>th</sup> 11:59pm</b>	Chapter 4
Sept 15 (F)	<b>Exam #1</b>	<b>Exam #1</b>	
Sept 18 (M)	Energy Expenditure/Fatigue	<b>Quiz #3</b>	Chapter 5
Sept 20 (W)	<b>EE/EPOC Lab</b>		
Sept 22 (F)	Energy Expenditure/Fatigue		Chapter 5
Sept 25 (M)	Cardiovascular	<b>Quiz #4</b>	Chapter 6
Sept 27 (W)	Cardiovascular	<b>Lab #1 Due</b>	Chapter 6
Sept 29 (F)	Respiratory	<b>Quiz #5</b>	Chapter 7
Oct 2 (M)	Respiratory		
Oct 4 (W)	<b>VO2max Test Lab</b>		
Oct 6 (F)	Respiratory		Chapter 7
Oct 9 (M)	Cardio/Pulmonary Response to exercise	<b>Quiz #6</b>	Chapter 8
Oct 11 (W)	<b>TBL:</b> Cardio/Pulmonary Response to exercise	<b>iRAT/tRAT #2</b>	Chapter 8

Oct 13 (F)	<b>TBL (activity 1):</b> Cardio/Pulmonary Response to exercise	<b>Lab #2 Due</b>	Chapter 8
Oct 16 (M)	<b>TBL (activity 2):</b> Cardio/Pulmonary Response to exercise		
Oct 18 (W)	<b>TBL: Gallery Walk Review</b>	<b>Concept Map #2 Due</b>	
Oct 20 (F)	<b>No Class: Fall Break</b>		
Oct 23 (M)	<b>Exam #2</b>	<b>Exam #2</b>	
Oct 25 (W)	Training Principles	View YouTube notes on Training Principles	Chapter 9, 14
Oct 27 (F)	Adaptations to resistance training	<b>Quiz #7</b>	Chapter 10
Oct 30 (M)	Adaptations to resistance training		Chapter 10
Nov 1 (W)	Adaptations to resistance training		Chapter 10
Nov 3 (F)	Adaptations to endurance training	<b>Quiz #8</b>	Chapter 11
Nov 6 (M)	Adaptations to endurance training		Chapter 11
Nov 8 (W)	Adaptations to endurance training		Chapter 11
Nov 10 (F)	Exercise in the heat	<b>Quiz #9</b>	Chapter 12
Nov 13 (M)	<b>TBL:</b> Heat and Altitude	<b>iRAT/tRAT #3</b>	Chapters 12, 13
Nov 15 (W)	<b>TBL(Activity #3):</b> Altitude		Chapter 12
Nov 17 (F)	<b>TBL(Activity #4):</b> Heat		Chapter 13
Nov 20 (M)	<b>TBL: Gallery Walk Review</b>		
Nov 22-24	<b>No Class: Thanksgiving Break!</b>		
Nov 27 (M)	<b>Exam #3</b>	<b>Exam #3</b>	Gaesser Article
Nov 29 (W)	Health Benefits of Exercise	<b>Quiz #10</b>	Gaesser Article
Dec 1 (F)	Health Benefits of Exercise	<b>Final Concept Map Draft Due</b>	Chapter 21
Dec 4 (M)	Health Benefits of Exercise		Chapter 21
Dec 6 (W)	Obesity and Nutrition	<b>Quiz #11</b>	Chapter 22
Dec 8 (F)	Obesity and Nutrition	<b>Final Concept Map Due</b>	Chapter 22
Dec 13 (W)	<b>Final Exam: 7:30-10:00 AM</b>		